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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,920

09/07/2006

Yoshito Tobe

3274-060290

5381

28289 7590 12/30/2008
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EXAMINER

WEISZ, DAVID G

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

12/30/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/591,920	Applicant(s) TOBE ET AL.	
	Examiner DAVID WEISZ	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>20070817</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

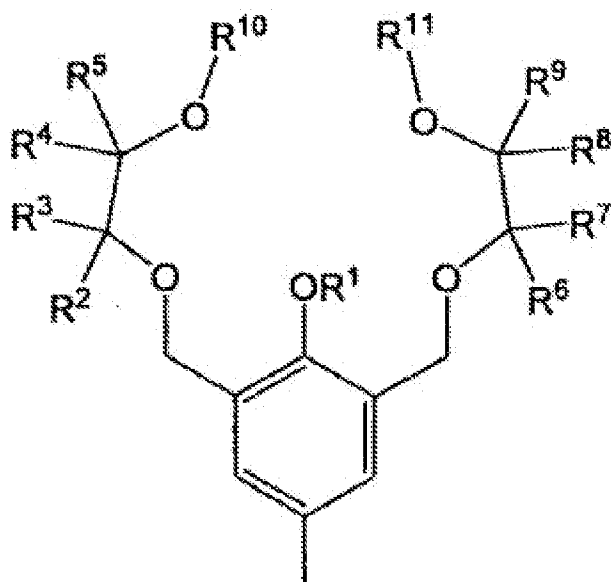
1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (Ion-Specific Aggregation in Conjugated Polymers: Highly Sensitive and Selective Fluorescent Ion Chemosensors) in view of Naemura et al. (Temperature dependent reversal of enantiomer selectivity in the complexation of optically active phenolic crown ethers with chiral amines)

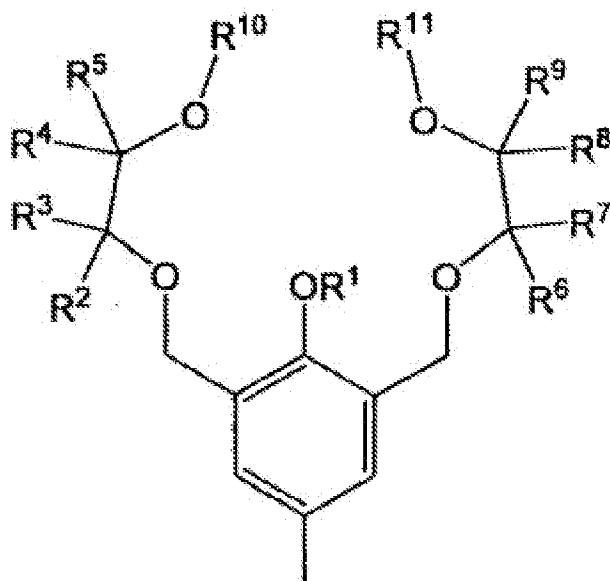
Regarding claim 1, Kim discloses a fluorescent molecular wire comprising a polymer main chain having a linked conjugated system to which an optically active substituent is linked so as to be conjugatable form (**see equations 1-3, Page3869/Col1**).

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However, Kim does not disclose the optically active substituent being represented by the following formula:



Naemura discloses the optically active substituent (**see equation 4; Page2749/Col2**):



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Where R1 represents a hydrogen atom; R2, R3, R4, R6, R7 and R8 represent, independently, hydrogen atoms; R5 and R9 represent methyl groups; and R10 and R11 represent a bonded alkyl group with an oxygen heteroatom.

Kim and Naemura are analogous because both references are directed toward chemosensors having crown ethers bonded to conjugated systems.

It would have been obvious to one having ordinary skill in the art at the time of the invention to use the optically active substituent of Naemura in the fluorescent molecular wire of Kim because it is an obvious variation of the optically active substituent of Kim, wherein both substituents are capable of sensing chiral compounds or metal ions.

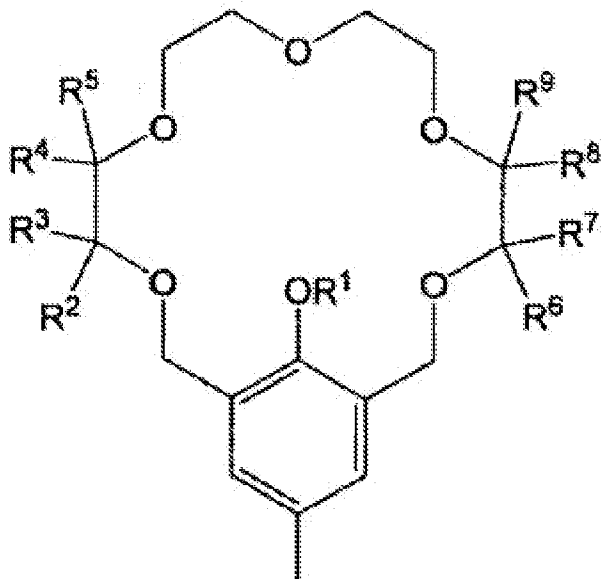
Regarding claim 2, modified Kim discloses all of the claim limitations as set forth above. Additionally, the reference discloses the fluorescent molecular wire wherein the polymer main chain having a linked conjugated system is a polyarylene structure **(see Kim; equations 1-3, Page3869/Col1)**.

Regarding claim 3, modified Kim discloses all of the claim limitations as set forth above. Additionally, the reference discloses the fluorescent molecular wire wherein the polymer main chain having a linked conjugated system is a polyphenylene structure **(see Kim; equations 1-3, Page3869/Col1)**.

Regarding claim 4, modified Kim discloses all of the claim limitations as set forth above. Additionally, the reference discloses the fluorescent molecular wire wherein the optically active substituent is coupled to the polymer main chain having a linked conjugated system via polyarylene **(see equations 1-3, Page3869/Col1)**.

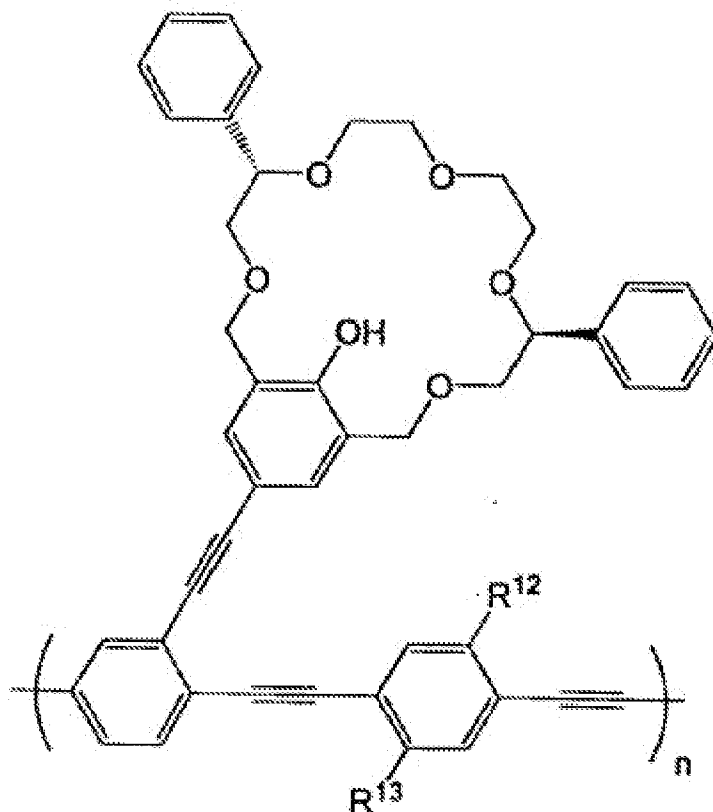
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Regarding claim 5, modified Kim discloses all of the claim limitations as set forth above. Additionally, the reference discloses the fluorescent molecular wire wherein the optically active substituent is represented by the following formula (see Naemura; equation 4; Page2749/Col2):



where R¹ represents a hydrogen atom; R², R³, R⁴, R⁶, R⁷ and R⁸ represent, independently, hydrogen atoms; and R⁵ and R⁹ represent methyl groups.

Regarding claim 6, modified Kim discloses all of the claim limitations as set forth above. Additionally, the reference discloses the fluorescent molecular wire represented by the following formula (see Naemura; equation 4; Page2749/Col2; and Kim; equations 1-3, Page3869/Col1):



Where R12 and R13 represent, independently, methoxy groups, methyl groups or isopropyl groups.

Regarding claim 7, modified Kim discloses all of the claim limitations as set forth above. Additionally, the reference discloses a chiral sensor comprising a molecular wire (**see Naemura, Paragraph 1 and equation 4, Page 2749; see Kim; equation 1-3, page3869/Col1**).

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor

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and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID WEISZ whose telephone number is (571)270-7073. The examiner can normally be reached on Monday - Thursday, 7:30 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. W./
Examiner, Art Unit 1797

/Jill Warden/
Supervisory Patent Examiner, Art Unit 1797